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BIBIONIDAE

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6. BIBIONIDAE

By D. Elmo Hardy, Ames, Iowa

This collection contains the largest number of Bibionidae that have ever been gathered by any of the African expeditions. The late Dr. F. W. Edwards was greatly interested in these flies and collected nearly as many species in the Ruwenzori area as had been known previously from the entire Ethiopian region. The collection contains nineteen species, in three genera, of which thirteen are evidently undescribed.

The writer is very grateful to the authorities of the British Museum for having had the opportunity to study this interesting collection. The information gained from it has greatly increased our knowledge concerning the Ethiopian Bibionidae.

All the species discussed in this paper will be keyed in the writer's forthcoming Monograph of the African Bibionidae.

Plecia Wiedemann 1828

This collection was especially rich in *Plecia*. Hitherto only three species of this genus have been reported from Africa. There are ten species in the Ruwenzori Expedition collection, all apparently undescribed.

Plecia aliena sp. n.

(Figs. 1 *a–b*)

This species belongs in the group which have the thorax entirely rufous. It is distinguished from the other related species by having the ninth tergum bilobate in the middle of the hind margin and not deeply concave. The harpagones and the ninth sternum are also shaped differently from those of the species hitherto known.

Male. All pile brown to black. *Head:* rostrum rather small, not strongly developed. Eyes bare, except for a few short, inconspicuous hairs. Antennae nine-segmented, slightly yellowish on the basal segments. *Thorax:* entirely yellow red in colour. Stems of halteres yellow, knobs brown. *Legs:* chiefly dark brown to black, coxae and trochanters yellowish tinged and femora faintly reddish in ground colour. All leg segments slender. *Wings:* yellow brown fumose, stigmata slightly darker than the membrane. The costa extends nearly

half-way from the tip of vein R_5 to M_1. Vein R_{3+4} gently curved, forming about a 60-degree angle with R_5. Anal vein very weak, not reaching wing margin. *Abdomen:* dark brown to black, thickly pilose. *Genitalia:* posterior margin of ninth tergum with a pair of rounded lateral lobes and a pair of subacute median lobes; the median lobes have a small V-shaped cleft between them (Fig. 1*b*). The ninth sternum is about two times wider than long and has a pair of strong, densely haired tubercles on its hind margin, just inside the harpagones. The harpagones are rather large and conspicuous and are acutely pointed at apices (Fig. 1*a*).

Length: body, 5·0–5·5 mm.; wings, 6·0–6·5 mm.

Female. Antennae ten-segmented, rather short and compact. Head as wide as long, from a dorsal view. Front slightly tuberculate just above antennae. Ocellar tubercle rather small. *Genitalia:* ninth tergum short, three times wider than long, with the lateral margins produced and extending around to the venter. Eighth tergum divided into two large plates, each has a broad rounded lobe at the apex on inner margin and another small, rather inconspicuous, lobe just below this on the inside edge of the plate.

Length: body, 5·5 mm.; wings, 7·0 mm.

Holotype male: Kilembe, Uganda, Ruwenzori Range, 4500 ft., xii.1934–i.1935 (*F. W. Edwards*). Allotype and seven paratypes, six males, one female: same data as type. Two males, Eala, Belg. Congo, 2.xi.1935–29.iv.1936 (*J. Ghesquiere*).

Holotype, allotype and four paratypes returned to the British Museum. Two deposited in the United States National Museum and two in the Iowa State College collection. One returned to Musée Royal D'Histoire Naturelle de Belgique.

Plecia basalis sp. n.

(Figs. 2 *a–b*)

This species is related to *P. sana* sp. n., but is much larger in size and the male hypopygium is very different. It is best distinguished by the spine-like basal lobe of the harpagones and the differences in size and shape of the ninth tergum and sternum.

Male. All pile black. *Head:* rostrum well developed but not conspicuous when folded back in resting position. Antennae ten-segmented, the first segment of the flagellum rather short and broad, not equal in length to the scape and pedicel combined. Eyes bare, ocellar tubercle moderately developed. *Thorax:* mesonotum and scutellum chiefly bright orange in colour, front portion of the mesonotum dark brown to blackish; scutellum with a very narrow black stria in the middle. Humeri brown to black, metanotum brown with a yellowish tinge. Pleurae black with a faint reddish tinge in the central portion. Bases

of halteres yellowish, knobs black. *Legs:* entirely black, all segments slender. *Wings:* dark brown to almost blackish fumose, stigmata not differentiated. Costa rather short, extending only about one-fourth the distance from tip of R_5 to tip of M_1. R_{3+4} rather strongly curved forming about a 50-degree angle with R_5. Petiole of veins M_1 and M_2, from crossvein to forking of the veins, rather short, about equal in length to the *r–m* crossvein. *Abdomen:* black, densely pilose. Rather long and slender, about two times longer than the combined lengths of the head and thorax. *Genitalia:* ninth tergum nearly two times wider than long and deeply concave, almost to its base, on the hind margin. The lateral lobes are rather acutely pointed at apices (Fig. 2*b*). The cerci are large and oval in shape. The ninth sternum is broad, its hind margin is very irregular; on each side are a pair of broad blunt lobes and the median portion appears to be continuous with a membraneous sheath that protects the aedeagus. The harpagones are bilobed, with a small spine-like basal lobe on the outside of each harpago. The apical lobe is elongate and very slender (Fig. 2*a*).

Length: body, 7·5 mm.; wings, 8·0 mm.

Female unknown.

Holotype male: Kanaba, Uganda, Kigezi Dist., 7800 ft., xi.1934 (*F. W. Edwards*).

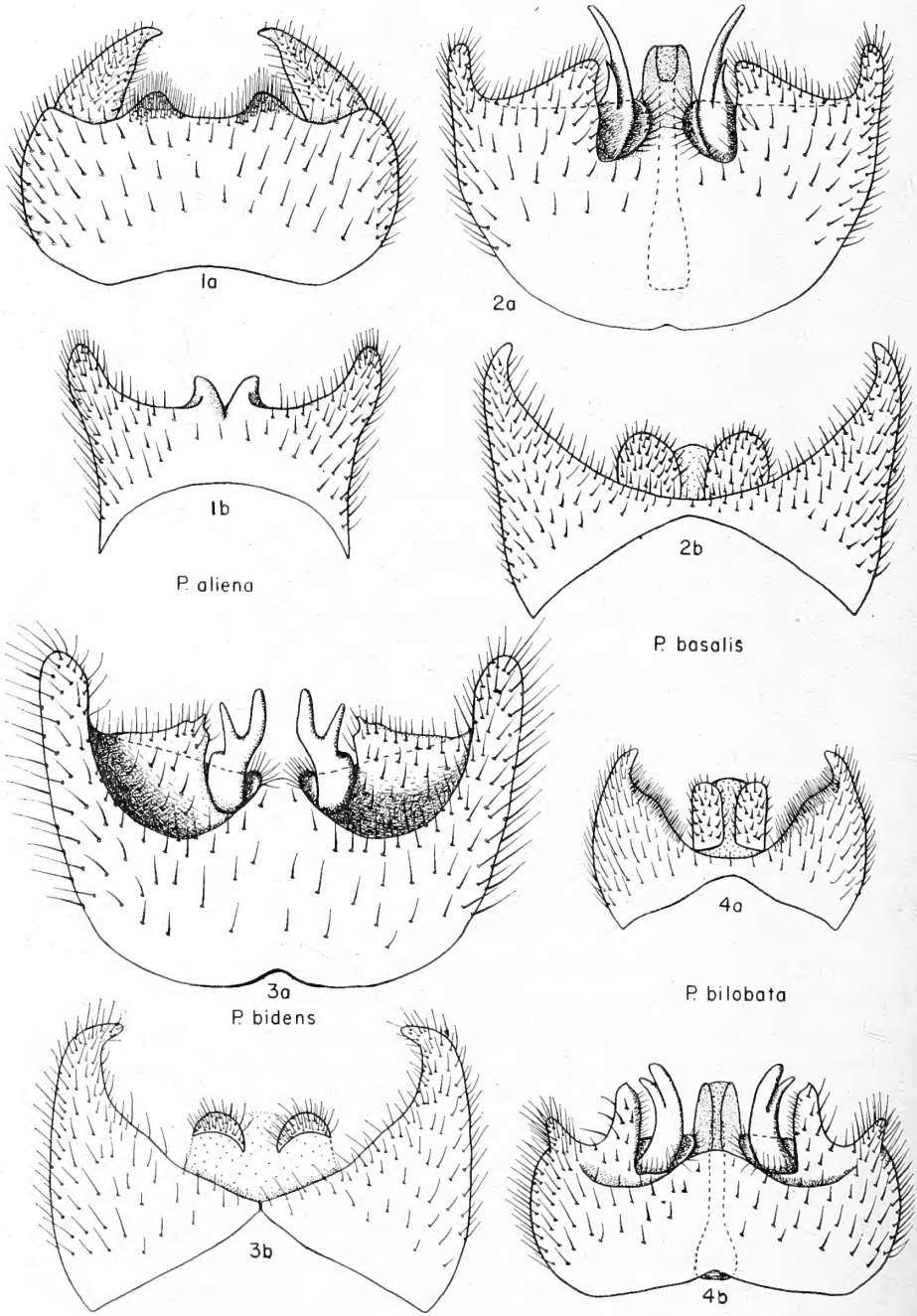
Type returned to the British Museum.

Plecia bidens sp. n.

(Figs. 3 *a–b*)

This species is distinguished from all other members of the *ruficollis* group by the bilobed harpagones of the males, the unusual development of the inner hind margin of the ninth sternum and by having the ninth tergum divided into two plates.

Male. All pile black. *Head:* eyes distinctly short pilose, rather indistinctly divided into two portions by a difference in the size of the facets on the lower one-fourth to one-third. Rostrum well developed, almost as long as the head. Antennae made up of nine distinct segments, the first flagellar segment is equal in length to the scape and pedicel combined. *Thorax:* mesonotum and scutellum bright orange, except for a large brown to black median spot on front margin and a narrow black median stria on the scutellum. Humeri and metanotum brown to black, pleurae and halteres black. *Legs:* entirely black, all segments slender. *Wings:* yellowish brown fumose, stigmata slightly darker than the membrane. Costa extending about one-third the distance from the tip of R_5 to M_1. R_{3+4} is gently curved and forms about a 70-degree angle with R_5. The petiole of M_1 and M_2, from the crossvein to the fork, is slightly longer than the *r–m* crossvein. *Abdomen:* entirely dark brown to black, thickly haired.



FIGS. 1–4. Male genitalia of *Plecia* spp.
1.—*P. aliena* sp. n.; (*a*) ventral, (*b*) ninth tergum. 2.—*P. basalis* sp. n.; (*a*) ventral, (*b*) dorsal. 3.—*P. bidens* sp. n.; (*a*) ventral, (*b*) dorsal. 4.—*P. bilobata* sp. n.; (*a*) dorsal, (*b*) ventral.

Genitalia: ninth tergum deeply cleft, almost to its base on hind margin, narrowly divided in the middle into two plates. The lateral lobes are rather slender and strongly forcipate (Fig. 3*b*). The cerci are rather small and much wider than long, rather crescent-shaped. The ninth sternum is very broad, rather short, and is very irregular on its hind margin. The posterior lateral margins are developed into a pair of large rounded lobes. Inside of each lateral lobe, outside each harpago, is a large acutely pointed lobe developed from the inner margin of the sternum (Fig. 3*a*). The harpagones are developed into two strong apical lobes (Fig. 3*a*).

Length: body, 6·0 mm.; wings, 7·0 mm.

Female. Antennae ten-segmented, the last segment small and nipple-like. The front has a large tubercle in middle just above antennae. Ocellar tubercle only moderately developed. The mesonotum is almost entirely rufous, with only a small indistinctly brown spot on the front margin. Otherwise like the male, except for genital characters.

Length: body, 5·5 mm.; wings, 7·7 mm.

Holotype male: Namwamba Valley, Uganda, Ruwenzori Range, 8300 ft., xii.1934–i.1935 (*F. W. Edwards*).

Allotype female and three paratype males, same data as type; six paratype males, Mobuku Valley, Uganda, Ruwenzori Range, 7300 ft., xii.1934–i.1935 (*F. W. Edwards*).

Holotype, allotype and five paratypes returned to the British Museum. Two deposited in the United States National Museum and two in the Iowa State College collection.

Plecia bilobata sp. n.

(Figs. 4 *a–b*)

This species is related to *P. yabaensis* sp. n. It is distinguished by having a pair of strong lobes developed on each side of ninth sternum and the harpagones not deeply bilobed.

Male. All pile black. *Head:* antennae nine-segmented, dark brown in colour, sometimes with a faint yellowish tinge. Eyes almost bare, with just a few short inconspicuous hairs. Ocellar tubercle very prominent. *Thorax:* humeri, mesonotum and scutellum usually all rufous except for a narrow brown median stria on the scutellum. Some specimens have the humeri and the front portion of the mesonotum dark yellowish brown to blackish. The metanotum is chiefly yellowish red with a faint brownish tinge. The pleurae are dark brown to black, slightly rufous tinged in the middle. Bases of halteres yellowish, knobs brown to black. *Legs:* dark brown to black with a faint reddish tinge. All segments slender. *Wings:* dark brown fumose, stigmata not differentiated from the wing membrane. Costa extending slightly more than one-third the

distance between the tips of veins R_5 and M_1. R_{3+4} slightly curved, forming about a 65-degree angle with vein R_5. *Abdomen:* brown to black, rather densely pilose. *Genitalia:* ninth tergum deeply concave on hind margin, the cleft extends almost to its base. The lateral lobes of the tergum are rather slender and pointed at their apices (Fig. 4*a*). The ninth sternum has a pair of well-developed lobes on each side of posterior margin. The inner lobes are just outside of the harpagones, they are heavily sclerotized, pointed at apices and are clasper-like in appearance (Fig. 4*b*). The harpagones are bifid on the apical one-third (Fig. 4*b*).

Length: body, 5·0–6·5 mm.; wings, 6·0–7·0 mm.

Female. Antennae ten-segmented, the segments somewhat more compact than in the male. Front with a very prominent tubercle in the middle just above antennae, otherwise like the male except for genital characters.

Holotype male and allotype female: Fort Portal, Mubende, Uganda, Ruwenzori Range, 15.xii.1934. Thirty-nine paratypes, twenty-three males, sixteen females, same data as type; Mobuku Valley, 7300 ft., Uganda, Ruwenzori Range, xii.1934–i.1935 (*F. W. Edwards*); Masaka, Uganda, 13.xi.1934 (*F. W. Edwards*); Kampala, Uganda, 12.xii.1934 (*F. W. Edwards*); Kilembe, Uganda, 4500 ft., Ruwenzori Range, xii.1934–i.1935 (*F. W. Edwards*); Ruwenzori, 5300 ft., 95–41 (*Scott Elliot*); Bwamba, iv.1944 (*Van Someren*); Kawanda, Uganda, v.1939; Kabowa, Uganda, 12.i.1921 (*H. H.*); Jeza, Uganda, 4.ii.1921 (*H. H.*); Mubende, Uganda, 10.i.1923; B. E. Africa, Lake Victoria Is., Kome, 10.xii.1918 (*G. D. H. Carpenter*); Cent. Africa, L. Tanganyika, Lueba, nr. Baraka 14.x.1927 (*R. Bois*); Abyssinia, Higo Samula, 30.x.1911 (*R. J. Stordy*); Abyssinia, Djem-Djem Forest, *circa* 8000–9000 ft., x.–xi.1926 (*H. Scott*); Pawa, Belgian Congo, 28.v.1938 (*Dr. Radna*); Kassai Dist., Luluabourg, Belgian Congo and Kennema, Sierra Leone, 16.xii.1924 (*E. Hargreaves*).

Type, allotype and twenty-seven paratypes returned to the British Museum; three returned to the Imperial Institute of Entomology; three deposited in the United States National Museum; three in the American Museum; and three in the Iowa State College collection.

Plecia curta sp. n.

(Figs. 5 *a–b*)

This species is related to *P. ruficollis* (Fabr.), but is distinguished by having a large apical projection in the middle of the ninth tergum of the males and by the very broad, short harpagones.

Male. All pile black. *Head:* rostrum moderately developed. Antennae nine-segmented, dark brown to black in colour. Eyes bare. *Thorax:* mesonotum chiefly rufous, the front portion dark brown to black. Humeri and metanotum entirely dark brown. Scutellum reddish brown with a black median stria.

Pleurae all black, except for a faint reddish tinge in the middle portion. Bases of halteres yellowish, knobs black. *Legs:* black, all segments slender. *Wings:* rather pale yellowish brown, stigmata not differentiated from the wing margin. Costa extending nearly half-way from the tip of vein R_5 to M_1. R_{3+4} slightly curved and entering the costa at about a 65-degree angle to R_5. Anal vein very weak. *Abdomen:* black, rather thickly pilose. *Genitalia:* ninth tergum about one and one-half times wider than long, hind margin gently concave and with a large, heavily sclerotized process extending from its middle (Fig. 5*a*). The sternum is about two times wider than long and is slightly concave on its posterior margin. The harpagones are large and well developed, at their bases they are about half as wide as long. The harpagones are acutely pointed at apices (Fig. 5*b*).

Length: body, 5·0 mm.; wings, 6·5 mm.

Female unknown.

Holotype male: Fort Portal, Mubende, Uganda, Ruwenzori Range, 15.xii. 1934 (*F. W. Edwards*). Two male paratypes: Uganda Prot., Mpanga Forest, Toro., 4800 ft., 13–23.xi.1911 (*S. A. Neave*) and Uganda, Kalinzu Forest, 1935 (*T. H. E. Jackson*).

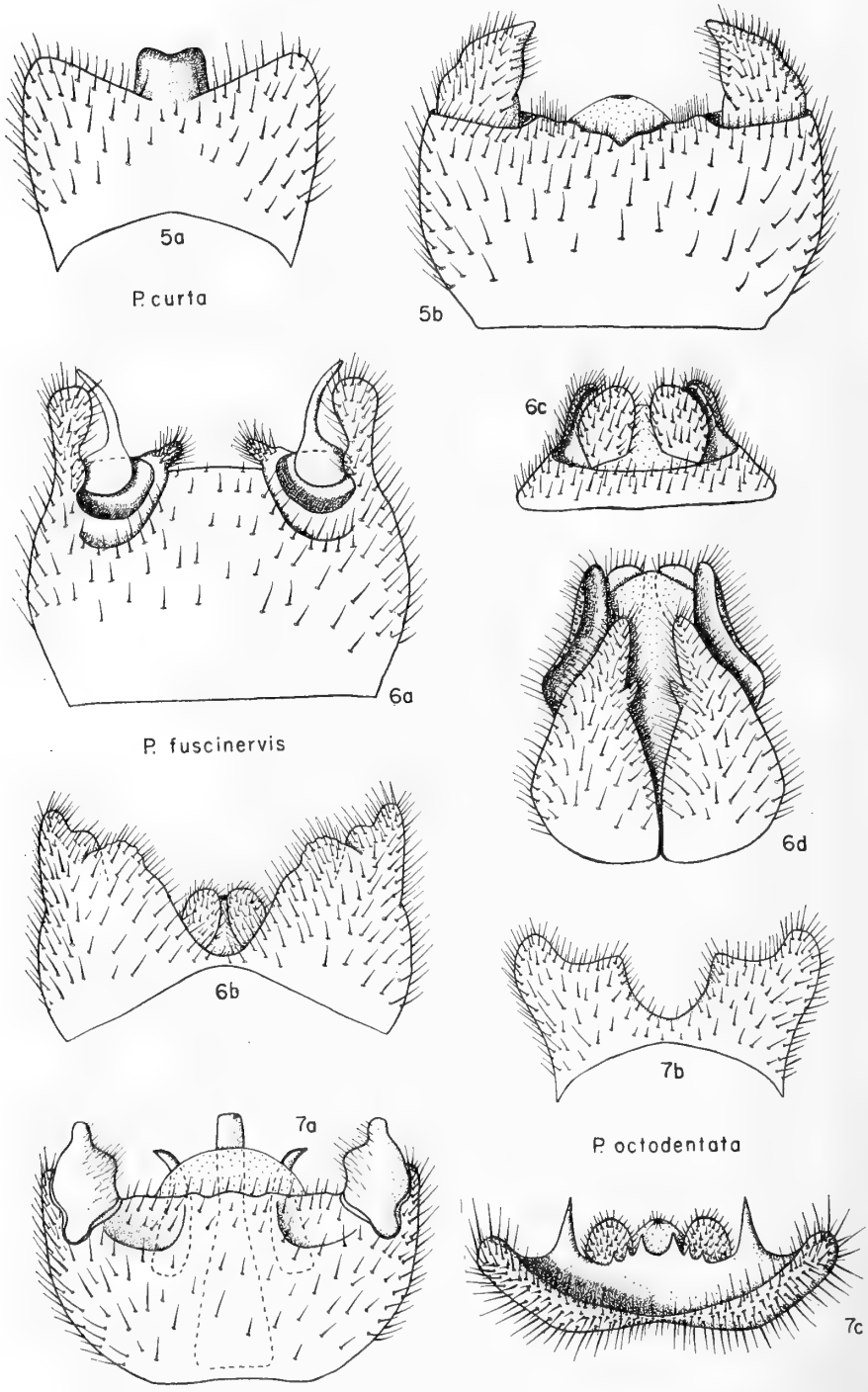
Type and one paratype returned to the British Museum. One paratype deposited in the United States National Museum.

Plecia fuscinervis sp. n.

(Figs. 6 *a–d*)

This species is distinguished from all known African *Plecia* by its all-black colour and by having the wings fumose along the veins and crossveins.

Male. Large opaque black species. *Head:* all pile black. Eyes with a few very short hairs. Eyes not divided into two portions by a difference in the size of the facets. Rostrum well developed. Antennae ten-segmented and rather elongate. *Thorax:* lightly greyish pollinose. Mesonotum and scutellum bare except for some very short recumbent yellow hairs. Mesonotum with two deep longitudinal furrows extending one on each side from just behind the humeri into the sunken portion just before the scutellum; this sunken area is very coarsely rugose. The scutellum is slightly darker in the middle, faintly yellowish tinged on the sides and has a longitudinal furrow down the middle. The pleurae are bare except for a patch of rather long yellow hairs on the upper portion of the sternopleurae. The halteres are yellowish at their bases, the knobs are brown to black. *Legs:* coxae and trochanters yellow pilose, pile otherwise black. Femora moderately swollen at apices, tibiae and tarsi slender. *Wings:* chiefly brownish yellow fumose, darker along the veins and crossveins. Stigmata brown, darker than the membrane. The costa extends slightly over one-third the distance from the tips of veins R_5 and M_1. All veins very heavy and dark



FIGS. 5–7. Genitalia of *Plecia* spp.
5.—*P. curta* sp. n., male; (*a*) ninth tergum, (*b*) ventral view. 6.—*P. fuscinervis* sp. n.; (*a*) male genitalia ventral and (*b*) dorsal, (*c*) female genitalia dorsal and (*d*) ventral (scale smaller). 7.—*P. octodentata* sp. n., male; (*a*) genitalia, ventral, (*b*) ninth tergum, dorsal, (*c*) ninth tergum, end view (scale smaller).

brown. Vein R_{3+4} curves gently into the costa and forms about a 70-degree angle with R_5. The cubital cell is very widely open in the costa, the cell is not at all narrowed apically. *Abdomen:* rather densely yellow pilose, strongly swollen at apex. *Genitalia:* the ninth tergum is deeply cleft in the middle on the hind margin, the concavity extends nearly to its base. The posterior lateral margins of the tergum are developed into a pair of short irregular lobes on each side (Fig. 6*b*). The ninth sternum has a large obtuse lobe developed on each side at apex and a pair of smaller densely bristled lobes just inside the harpagones. The harpagones are broad at bases and strongly tapered into long slender apices (Fig. 6*a*).

Length: body, 7·0–8·0 mm.; wings, 9·5–10·3 mm.

Female. Agreeing in most respect with the male. The antennae are eleven-segmented, the last three are closely joined. The pile of the femora and tibiae appears slightly yellowish in some lights. The head is opaque black and the median part of the front has a distinct tubercle just above antennae. *Genitalia:* the ninth tergum is greatly expanded at its sides and extends around the genital chamber (Fig. 6*c*). The cerci are large and broad, not over one and one-half times longer than wide. The eighth sternum is divided into two rather elongate plates and serves as an egg guide; the inner margin of each plate possesses a small densely bristled lobe at about the upper two-thirds (Fig. 6*d*).

Length: body, 7·5 mm.; wings, 10·3 mm.

Holotype male: Mt. Karangora, 9900 ft., Uganda, Ruwenzori Range, xii.1934–i.1935 (*F. W. Edwards*). Allotype female and thirteen paratypes, one female, twelve males, same data as type.

Holotype, allotype and nine paratypes returned to the British Museum; two deposited in the United States National Museum; and two in the Iowa State College collection.

Plecia octodentata sp. n.

(Figs. 7 *a–c*)

This species belongs in the group with the thorax all rufous, but differs very strikingly from all related species by having strong teeth on the inner margin of the ninth tergum of male and the oddly shaped harpagones.

Male. Head: antennae distinctly nine-segmented, the first flagellar segment is long and slender, equal in length to the next two segments combined. Eyes with very short inconspicuous pile. Rostrum not strongly developed. *Thorax:* entirely bright orange, except for a narrow faintly brown line down the middle of the scutellum and for a brown spot beneath the wing base. Almost entirely bare except for a few short, pale hairs on upper portion of sternopleurae. Halteres brownish yellow. *Legs:* all black pilose. Coxae and trochanters distinctly yellow red, remainder of legs dark brown to black. Femora moderately swollen

on apical halves, other segments slender, with parallel sides. *Wings:* Yellowish brown fumose, costal cell and stigmata darker brown. The costal vein extends nearly half-way between the tips of R_5 and M_1. R_{3+4} straight for most of its distance, curved sharply near its base; it forms a 65-degree angle with R_5. Petiole of veins M_1 and M_2 from fork to crossvein, twice as long as the *r–m* crossvein. Cubital cell widely open in the wing margin. *Abdomen:* dark brown to blackish, rather thickly black pilose. *Genitalia*: from a dorsal view the ninth tergum has a broadly U-shaped concavity on its hind margin which extends nearly to the base of the sclerite (Fig. 7*b*). From end view the inner margin of the tergum is armed with strong spines, these vary in number from two to eight and are pointed into the genital chamber (Fig. 7*c*). The cerci are oval in shape and inconspicuous, except from an end view. The ninth sternum is twice as wide as long and its posterior lateral margins are slightly lobate. The harpagones are very broad and short, they are less than twice as long as wide and are obtuse at apices (Fig. 7*a*). The aedeagus has a pair of sharply pointed accessory structures extending out of the membranous region just beneath the sternum (Fig. 7*a*).

Length: body, 7·0–7·5 mm.; wings, 8·5–9·5 mm.

Female. Antennae ten-segmented. Front tuberculate in middle above antennae. Otherwise as in the male except for genital characters.

Length: body, 7·0 mm.; wings, 11·0 mm.

Holotype male: Kampala, Uganda, 12.xii.1934 (*F. W. Edwards*). Allotype female, Semliki Plains, Uganda Prot., 2100–2900 ft., 8–9.xi.1911 (*S. A. Neave*). Thirty-four paratypes, twenty-six males, eight females: same data as type; two males, same data as allotype; North of L. Isolt, Uganda, 3700 ft., 4–6.i.1912 (*S. A. Neave*); Entebbe, Uganda, 3.ix.1912 (*C. C. Gowdey*) and Uganda (*E. D. W. Greig*); Eala, Belgian Congo, vi–xii.1937 (*J. Ghesquiere*) and Rutshuru, Belg. Congo, i–xii.1937 (*J. Ghesquiere*).

Type, allotype and eight paratypes returned to the British Museum; seventeen returned to Musée Royal D'Histoire Naturelle de Belgique; two paratypes deposited in the United States National Museum; and seven in the Iowa State College collection.

Plecia sana sp. n.

(Figs. 8 *a–b*)

This species is related to *P. basalis* sp. n., but is smaller in size, the wings are not so dark fumose and the male genitalia are very different. It is best distinguished by the elongate forcipate lateral lobes of the ninth tergum and the shorter differently developed harpagones.

Male. All pile black. *Head:* rostrum moderately developed, antennae nine-segmented, ocellar tubercle prominent. *Thorax:* front portion of mesonotum

dark brown to blackish, hind two-thirds orange in colour. Scutellum chiefly orange, with a very narrow black stria in the middle. Humeri and metanotum brown, pleurae dark brown to black. Halteres black. *Legs:* dark brown to black, all segments rather slender. *Wings:* yellow brown fumose, stigmata slightly darker than the membrane. Costa extending about half the distance between tips of veins R_5 and M_1. R_{3+4} rather strongly curved, forming a 60-degree angle with R_5. Petiole of M_1 and M_2, from the crossvein to the forking of the veins, one and a half times as long as the *r–m* crossvein. Anal vein weak. *Abdomen:* black, rather thickly pilose. *Genitalia:* ninth tergum very deeply cleft on the hind margin, the cleft extends nearly to the base of the tergum and is narrowly U-shaped in the middle. The lateral lobes are elongate and strongly forcipate (Fig. 8*a*). The ninth tergum is broader than long and has a pair of well-developed lobes on each side of hind margin. The harpagones are enlarged at bases and narrowed on the apical halves. Each harpago has a small, densely haired basal lobe on its ventral portion (Fig. 8*b*).

Length: 5·0 mm.; wings, 6·0 mm.

Female unknown.

Holotype male: Kalinzu Forest, Uganda, (*T. H. E. Jackson*). One paratype male, same data.

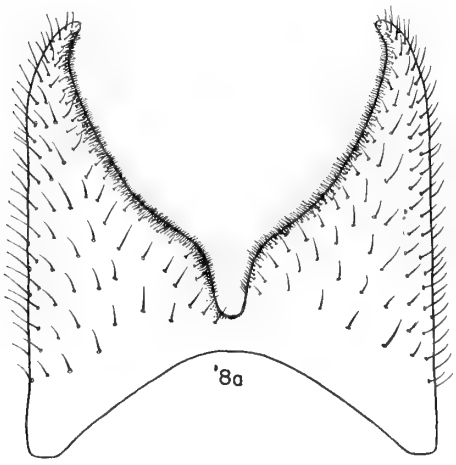
Type and paratype returned to the British Museum.

Plecia ugandaensis sp. n.

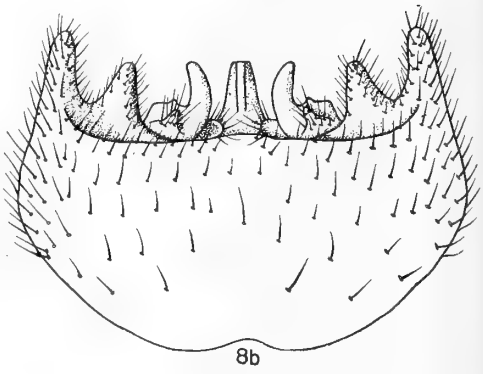
(Figs. 9 *a–d*)

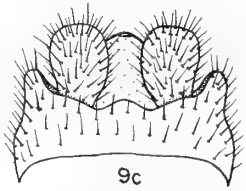
This species belongs in the group which have the thorax entirely rufous. It is distinguished from all known species of this complex by having the wings pale fumose, the hind margin of the ninth sternum of males developed into two pairs of strong lobes and by having the ninth tergum deeply cleft and the lateral lobes elongated.

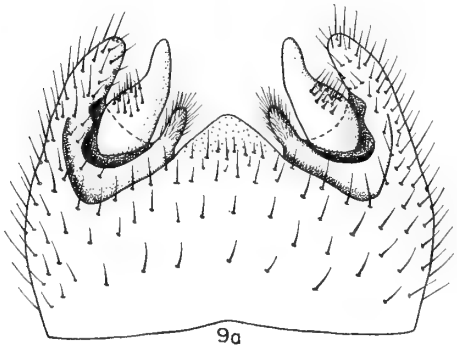
Male. Eyes bare, not divided into two portions by a difference in the size of the facets. Rostrum moderately developed but inconspicuous when folded against the face. Antennae with ten very distinct segments, the pedicel is yellow on its apical half, the remainder of the segments are brown to blackish. *Thorax:* entirely bright orange in colour, with very sparse, fine, recumbent, yellow hairs on the mesonotum and some longer erect, yellow hairs on the upper part of the sternopleurae. Scutellum without a distinct median stria. Halteres dark yellowish with a faint tinge of brownish. *Legs:* coxae and trochanters yellow red, with fine, yellow pile; remainder of legs black, with dense black pile. All leg segments slender. *Wings:* rather yellowish faintly fumose, stigmata brown, much darker than the wing membrane. Anterior veins dark brown, posteriors faintly yellow, concolorous with the wing membrane. The costa extends almost half-way from the tip of vein R_5 to M_1. Vein R_{3+4}



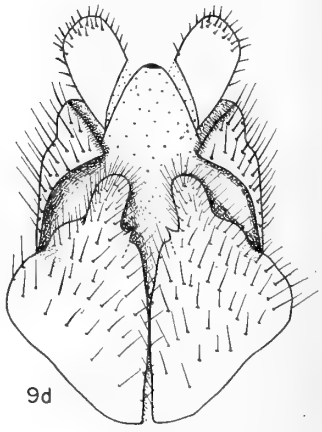
P. sana

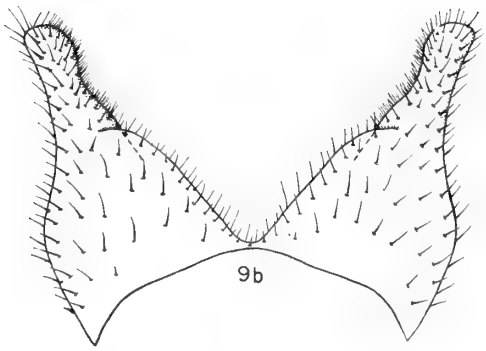


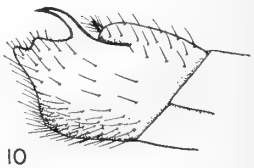




P. ugandaensis







P. uncinata

FIGS. 8–10. Genitalia of *Plecia* spp.
8.—*P. sana* sp. n., male; (*a*) ninth tergum, (*b*) genitalia, ventral. 9.—*P. ugandaensis* sp. n.; (*a*) male genitalia, ventral, and (*b*) ninth tergum; (*c*) female genitalia, dorsal, and (*d*) ventral (scale smaller). 10.—*P. uncinata* sp. n., male genitalia, lateral.

is gently curved and forms about a 70-degree angle with R_5. The petiole of M_1 and M_2, from the fork to the crossvein, is three times as long as the *r–m* crossvein. The anal vein reaches the wing margin but is very weak. The cubital cell is not at all narrowed at its apex. *Abdomen:* dark brown to blackish, rather thickly covered with yellowish pile. *Genitalia:* the ninth tergum is cleft to its base on the hind margin. The lateral lobes are strongly forcipate but are obtuse at their apices (Fig. 9*b*). The ninth sternum has a large well-developed lobe at each side of the posterior margin, and a small densely haired lobe just inside of each harpago. The posterior median margin is developed into a semi-membranous swelling. The harpagones are rather simple, the bases are thick and densely bristled above and the apices are gently tapered (Fig. 9*a*).

Length: body, 8·0 mm.; wings, 10·0–11·0 mm.

Female. Antennae eleven-segmented, front just slightly tuberculate above antennae. Eyes rather thickly covered with very short pile. *Genitalia:* ninth tergum about three times wider than long, its lateral margins extend around to the venter. The hind margin of the tergum is undulated (Fig. 9*c*). The cerci are large and oval in shape. The eighth sternum is divided into two large plates. Each of these has a large rounded apical lobe and a small sharply pointed process at apical one-fifth on the inner margin (Fig. 9*d*).

Length: body, 7·7 mm.; wings, 10·0–11·0 mm.

Holotype male: Kilembe, Uganda, Ruwenzori Range, 4500 ft. Light Trap, xii.1934–i.1935 (*F. W. Edwards*). Allotype female, same data as type. Thirteen paratypes, nine males, four females: Namwamba Valley, Uganda, Ruwenzori Range, 6500 ft., xii.1934–i.1935 (*F. W. Edwards*); Mobuku Valley, Uganda, Ruwenzori Range, 7300 ft., xii.1934–i.1935 (*F. W. Edwards*); Nyamgasani Valley, Uganda, Ruwenzori Range, 8000–9000 ft., xii.1934 i.1935 (*D. R. Buxton*); Kanaba, Uganda, Kigezi Dist., 7800 ft., xi.1934 (*F. W. Edwards*); Mt. Mgahinga, Uganda, Kigezi Dist., 8000 ft. (*F. W. Edwards*); Mt. Sabinio, Uganda, Kigezi Dist., 8000 ft. (*F. W. Edwards*) and Vumbu Mts., S. Rhodesia, x.1926.

Holotype, allotype and five paratypes returned to the British Museum; three returned to the National Museum of Southern Rhodesia; two paratypes deposited in the United States National Museum; and three in the Iowa State College collection.

Plecia uncinata sp. n.

(Figs. 10–11)

This species belongs in the group which have the mesonotum entirely rufous and the pleurae black. It is distinguished by having the ninth sternum and tergum fused on the sides and by the presence of a long curved spine on each side of the ventral portion. It is related to a new species from West Africa which

is being described in a subsequent paper, but the tergal portion is not elongated and the harpagones each have a distinct basal lobe.

Male. All pile black. *Head:* antennae ten-segmented, the last two are very closely joined. The basal three to four segments are faintly reddish tinged, the others are black. The rostrum is moderately developed but hidden beneath the head in resting position. *Thorax:* mesonotum, humeri and scutellum entirely yellowish red, the latter with a faint brownish median stria. Metanotum pale brownish yellow. Pleurae chiefly black, tinged slightly with reddish in the middle portion. Thorax without any conspicuous pile. Bases of halteres yellowish, knobs dark brown to black. *Legs:* dark reddish brown to black, all joints slender. *Wings:* dark brown fumose, stigmata not differentiated from the membrane. The costa extends nearly half-way between the tips of veins R_{3+4} and R_5. R_{3+4} is curved at its base and then runs straight into the costa, making about a 45-degree angle with vein R_5. Anal vein very weak. *Abdomen:* brownish black, moderately pilose. *Genitalia:* the sternum and tergum are united at the sides. The tergum is deeply concave on both posterior and anterior margins and the lateral arms are not quite equal in length to the remainder of the segment (Fig. 11*a*). From a ventral view a large curved spine is present on each side at about the apical three-fourths of the segment, from a lateral view this extends about as long as the lateral arms (Fig. 10). The median portion of the sternum has a pair of small, slender, densely bristled lobes just inside the harpagones. The harpagones are elongate and slender and each has a conspicuous basal lobe on the inner side (Fig. 11*b*).

Length: body, 4·5–5·0 mm.; wings, 5·5–6·0 mm.

Female. Antennae eleven-segmented. Rostrum about equal in length to the head. Otherwise as in the male, except for genital characters.

Length: body, 6·0 mm.; wings, 6·5 mm.

Holotype male: Uganda, Budongo Forest, 7–8.ii.1935 (*F. W. Edwards*). Allotype female: Uganda, Masaka, 13.xi.1934 (*F. W. Edwards*). Nine paratypes, five males, four females: same locality as type; Entebbe, Uganda, 21.viii.1911–x.1912 (*C. C. Gowdey*) and Belgian Congo, Deti, Kuri Forest, 8.xii.1931 (*F. R. Swift*).

Holotype, allotype and five paratypes returned to the British Museum; two paratypes deposited in the United States National Museum; and two in the Iowa State College collection.

Bibio Geoffroy 1762

Bibio afer Loew, 1854, Neue Beit. zur Kennt. der Dipt., 2 : 1.

This is the only representative of this genus in the collection. A rather large series of specimens were present from the following localities: Mt. Kinangop, Kenya, Aberdare Range, 8000 ft., x.1934 (*F. W. Edwards*); Mt. Mgahinga,

Uganda, Kigezi Dist., 8000 ft., xi.1934 (*F. W. Edwards*) and Mpanga Forest, Uganda, Ruwenzori Range, 4000 ft., xii.1934–i.1935 (*F. W. Edwards*).

Philia Meigen 1800[1]

This genus was represented by a rather large number of specimens, but by only eight species. Three of these appear to be undescribed.

Philia antipedalis (Wiedemann)

Dilophus antipedalis Wiedemann, 1818, Syst. Beschr., 1 : 308.
Dilophus femoratus var. *andalusiacus* Strobl, 1900, Wien. Ent. Zeitg., 19 : 92.

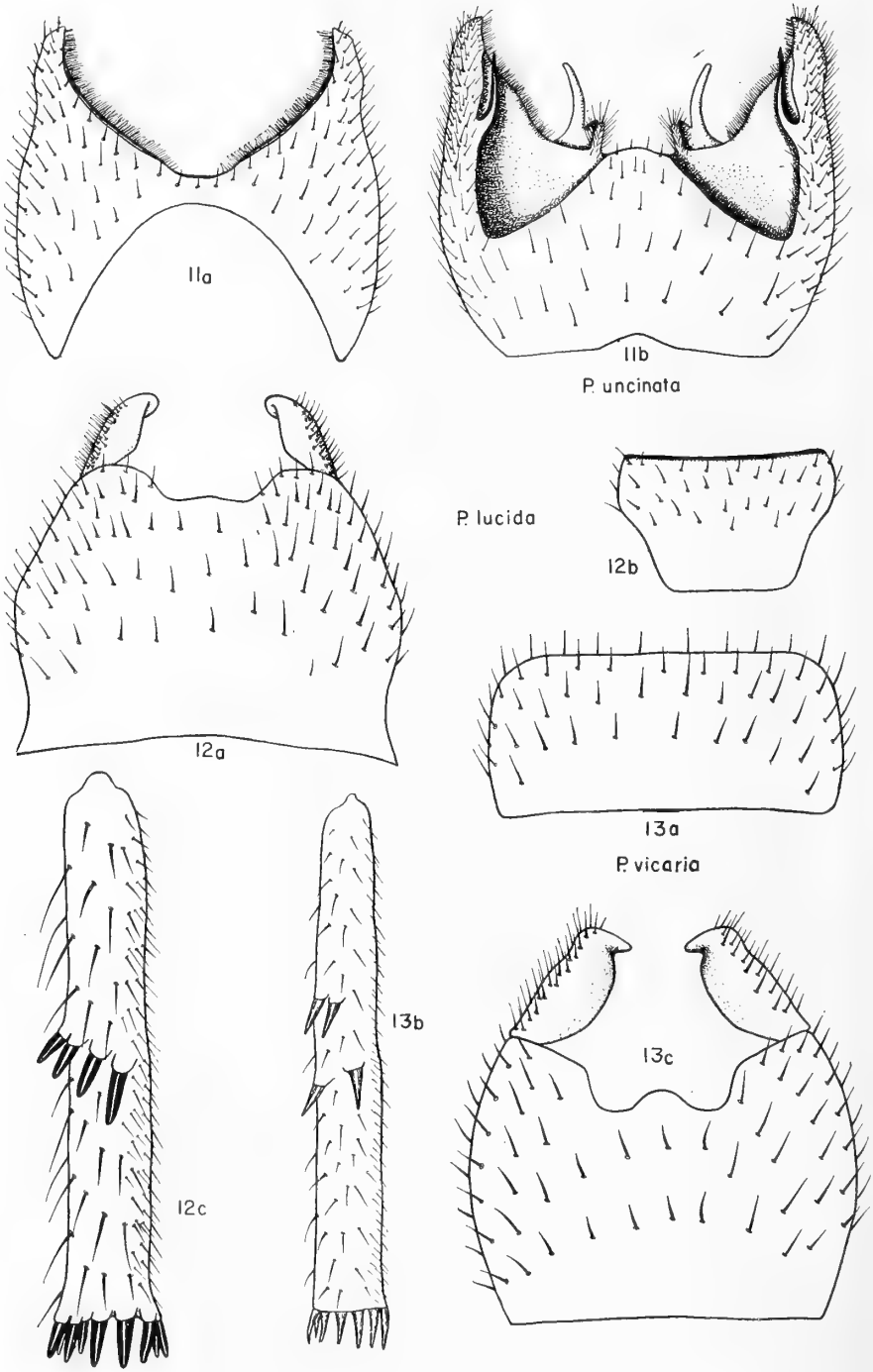
Specimens were taken at the following localities: Mt. Elgon, Kenya, Alpine Zone, 12,000–13,000 ft., on *Lobelia elgonensis*, ii.1935 (*F. W. Edwards*); Mt. Elgon, Kenya, Heath Zone, 10,500–11,500 ft., ii.1935 (*F. W. Edwards*) and Mt. Kinangop, Kenya, Aberdare Range, 12,000 ft., x.1934 (*F. W. Edwards*).

Philia buxtoni sp. n.

This species is related to *P. antipedalis* (Wied.), but is of much larger size and the wings are brownish fumose. It is similar to *P. bicolor* (Wied.) and to a new species from South Africa because of its large size and dark wings, but it does not have the rostrum developed beyond the antennae and the female thorax is almost entirely black.

Female. All pile pale yellowish. *Head:* just slightly longer than wide from a dorsal view. Rostrum developed just a short way beyond eye margin. Head black, except for yellowish labellum and apex of the pedicel of each antenna. Pile of anterior portion of head very elongate below, being equal in length to the head width. Eyes bare. Ocellar tubercle prominent, located at hind margin of head. *Thorax:* shining black, except for yellowish red humeral ridges and propleurae; the remainder of the pleurae are faintly reddish tinged. Halteres with black knobs and yellowish brown stems. *Legs:* front coxae and all femora rufous, the latter are narrowly black ringed at apices. The middle and hind coxae and the trochanters are yellowish brown. The tibiae and tarsi are black, the front tibiae are lightly reddish tinged. Front tibiae with two sets of spines; with four strong, slightly obtuse spines in a row at the middle of each tibia and nine spines in the apical set. The hind femora and tibiae are only slightly swollen and about equal in length. The hind basitarsi are about eight times longer than wide and equal in length to the next two subsegments. *Wings:* yellow brown fumose, slightly darker along costal margin. Stigmata and

[1] This genus is better known as *Dilophus* Meigen 1803. The question of the validity and availability of Meigen's names of 1800 being still the subject of controversy, the employment of *Philia* here by the author should not be taken to imply that British Dipterists endorse his action.—Ed.



FIGS. 11–13. Males of *Plecia* and *Philia* spp.
11.—*Plecia uncinata* sp. n.; (*a*) ninth tergum, (*b*) genitalia, ventral. 12.—*Philia lucida* sp. n.; (*a*) genitalia, ventral, (*b*) ninth tergum, (*c*) front tibia. 13.—*Philia vicaria* sp. n.; (*a*) ninth tergum, (*b*) front tibia, (*c*) genitalia ventral.

anterior veins dark brown, posteriors yellowish brown, darker than the membrane. Costa extending about half-way between the tips of veins *Rs* and M_1. Anal vein very weak, scarcely visible past the middle of the posterior lobe of the wing. *Abdomen:* venter and cerci yellowish brown, dorsum black.

Length: body, 7·2 mm.; wings, 8·0 mm.

Male unknown.

Holotype female: Nyamgasani Valley, 10,500–11,500 ft., Uganda, Ruwenzori Range, xii.1934–i.1935 (*D. R. Buxton*).

Philia erythraea (Bezzi)

Dilophus erythraeus Bezzi, 1905, Boll. Soc. Ent. Ital., 37 : 205–206.

A large series of this species was present in the collection from the following localities: Mt. Elgon, Kenya, Heath Zone, 10,500–11,500 ft., ii.1935 (*F. W. Edwards*); Kilembe, Uganda, Ruwenzori Range, 4500 ft., xii.1934–i.1935 (*F. W. Edwards*) and Fort Portal, Uganda, Ruwenzori Range, 4.xii.1934 (*F. W. Edwards*).

Philia femorata (Meigen)

Dilophus femoratus Meigen, 1804, Klass., 1 : 116.

These specimens appear to be *femorata* or a variety of this species. The wings are hyaline, not milky-white, and the stigmata are coloured brown.

The species was collected on Mt. Kinangop, 13,000 ft., at summit on *Lobelia elgonensis*, and Cedar Forest, 9000 ft.; Aberdare Range, Kenya, x.1934 (*F. W. Edwards and J. Ford*).

Philia lucida sp. n.

(Figs. 12 *a–c*)

This species is related to *P. erythraea* (Bezzi). It is distinguished by the elongate costa, extending about half the distance to the tip of M_1 and by the black halteres.

Male. Entirely shining black species, except for the brownish eyes and pale stems of halteres. Pile pale yellow, except for the brown pile on the eyes. *Head:* eyes densely covered with short pile. Rostrum just slightly developed beyond the eye margin and not at all produced beyond antennae bases. Antennae ten-segmented, the segments of the flagellum are rather compact. *Thorax:* very highly polished, the dorsum with moderately long and conspicuous dorsocentral and marginal hairs. Stems of halteres yellowish, knobs shining black. *Legs:* all segments rather densely covered with long pile. Tibiae and tarsi all slender, their sides are parallel or nearly so. The hind metatarsi are seven to eight times longer than wide. The front tibiae each have two sets of spines. The first set contains four rather blunt spines, in an oblique row, situated just slightly beyond the middle of the tibia (Fig. 12*c*). The apical set

contains eight blunt spines plus the undifferentiated apical spur. *Wings:* hyaline, stigmata lacking. Anterior veins yellowish to whitish, apical two-fifths of costa slightly tinged with brownish. Posterior veins entirely without colour and transparent. Costa extending about half the distance between the tips of *Rs* and M_1. Vein M_{3+4} extending to the wing margin, anal vein rather weak, ending at about the middle of the posterior lobe. *Abdomen:* terga one to four lightly greyish pollinose in the central portions. Abdomen otherwise polished black and quite densely pilose. *Genitalia:* the ninth tergum is about one and a half times wider than long and its hind margin is straight or nearly so (Fig. 12*b*). The hind margin of this plate is rather heavily sclerotized and a small portion of it folds back into the genital chamber. The anterior portion of the tergum is not heavily sclerotized and not well differentiated from the membrane. The ninth sternum is wider than long and has a rather shallow concavity in the middle of the hind margin. The harpagones are simple and obtuse at apices (Fig. 12*a*).

Length: body, 5·0 mm.; wings, 4·3 mm.

Female. Head: about one and one-half times longer than wide, from a dorsal view. Front rugose and sparsely pilose. Rostrum just slightly less than half as long as the eyes. Portion of head behind the eyes equal in length to the eyes. Ocellar tubercle very weak and located near the hind margin of the head. Apical half of the pedicel of each antenna yellow. *Thorax:* chiefly reddish yellow, metanotum, scutellum and sternum brown to blackish; pronotal combs and median area between the combs polished black; mesonotum with a broad shining black stripe, extending down the middle two-thirds its length. *Legs:* coxae and femora reddish yellow. *Wings:* very faintly fumose, not so glassy clear as in males. The anterior veins are lightly brownish yellow and the stigmata are brown. *Abdomen:* brown on the dorsum, yellowish brown on the venter. Otherwise like the male, except for genital characters.

Length: body, 4·0 mm.; wings, 4·6 mm.

Holotype male and allotype female, on same pin: Mt. Sabinio, 8000 ft., Kigezi Dist., Uganda, ix.1934 (*F. W. Edwards*). Three paratype females from the following localities: Kanaba, 7800 ft., Kigezi Dist., Uganda, ix.1934 (*F. W. Edwards*) and Mt. Kinangop, 9000 ft., Aberdare Range, Kenya, viii. 1934 (*J. Ford*).

Holotype, allotype and two paratypes returned to the British Museum; one paratype deposited in the United States National Museum.

Philia nupta Speiser

Philia nupta Speiser, 1914, Berl. Zeits. Deutsch. Ent. Ges., 1914 : 1.

Specimens were in the collection from Kilembe, Uganda, Ruwenzori Range, 4500 ft., xii.1934–i.1935 (*F. W. Edwards*).

Philia suberythrea (Edwards)

Dilophus suberythreus Edwards, 1915, Voy. Alluaud., Dipt. : 62.

Specimens of this species were present from the following localities: Mt. Kinangop, Kenya, Cedar Forest, Aberdare Range, 8000 ft., x.1934 (*F. W. Edwards*) and Nyeri Track, Kenya, Aberdare Range, 10,500 ft., x.1934 (*F. W. Edwards*).

Philia vicaria sp. n.

(Figs. 13 *a–c*)

This species resembles *P. nupta* Speiser because of its slender build. It is readily distinguished from that species by its hyaline wings, slender hind tibiae and tarsi, and by having four small spines arranged in two sets near middle of each front tibia.

Male. Head, thorax and abdomen highly polished black, except for pale humeral ridges and faintly brownish pleurae. All pile pale and rather sparse. *Head:* rostrum just slightly produced beyond eye margin but not beyond bases of antennae. Antennae ten-segmented, the last two to three are very closely joined. Pedicel of each antenna yellowish on apical half. *Legs:* coxae, trochanters and femora chiefly rufous, those of front legs often brownish tinged with red. Tibiae and tarsi black. Front tibia very slender, eight times longer than its greatest width. Four rather small and inconspicuous black spines are arranged in two sets near the middle of each tibia (Fig. 13*b*). Apices of front tibiae with ten to eleven spines. Hind tibiae slender, not swollen and about equal in length to the femora. Hind basitarsi long and slender, eight times as long as wide and twice as long as the next subsegment. *Wings:* hyaline stigmata and anterior veins yellowish brown, posteriors concolorous with the wing membrane. Costa extending half the distance from the tip of *Rs* to M_1. Halteres black. *Abdomen:* very long and slender, twice as long as the head and thorax combined. *Genitalia:* ninth tergum about twice as wide as long, hind margin straight (Fig. 13*a*). Ninth sternum with a small sclerotized mound in the middle on hind margin. Harpagones large, well developed, pointed on the inner apices (Fig. 13*c*).

Length: body and wings, 5·0–6·0 mm.

Female unknown.

Holotype male: Mt. Mgahinga, 10,000–11,000 ft., Uganda, Kigezi Dist., xi.1934 (*F. W. Edwards*). Eight paratype males: six, same data as type; one, Mt. Sabinio, 9000–10,000 ft., Uganda, Kigezi Dist., 25.xi.1934 (*F. W. Edwards*) and one Namwamba Valley, Uganda, 8300 ft., Ruwenzori Range, xii.1934–i.1935 (*F. W. Edwards*).

Type and five paratypes returned to the British Museum; two paratypes deposited in the United States National Museum; one in the Iowa State College collection.